

REMARKS

Claims 1-26 are pending in the application. Claim 1 has been amended. Claims 1-26 have been rejected as obvious in view of Choi, et al. (JP 2000058777) in view of Zhang (U.S. Patent 5,886,364), Chiu, et al. (TW 381343) and Sun, et al. (U.S. Patent 6,150,209) in various combinations. Applicant respectfully requests reconsideration of such rejections.

Referring first to claim 1, such claim has been amended to clarify an error of a typographical nature, no new matter has been added. As amended claim 1 recites a method of forming a capacitor structure that in pertinent part includes forming a first electrical node, forming a layer of metallic aluminum oxide over the first electrical node and then transforming at least some of the metallic aluminum to an AlN or AlON. Claim 1 further recites forming a second electrical node that is electrically separated from the first electrical node by at least the dielectric material of the transformed metallic aluminum. Claim 1 also recites that the first electrical node, the second electrical node and the dielectric material together define at least a portion of a capacitor structure.

The Examiner is respectfully referred to MPEP §2142, which recites, in part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 1 is believed allowable over the cited references for at least the reason that it recites transforming at least some of a layer of metallic aluminum to AlN or AlON which

defines at least a portion of a capacitor structure. The cited references either alone or in combination cannot be relied on to suggest or motivate such a recitation. As the applicant understands it, to establish obviousness, the office action relies upon: Choi, for the teaching of an aluminum nitride layer between a first electrical node and a second electrical node, the construction of which forms at least a portion of a capacitor; in combination with Zhang for the teaching that oxygen atoms and/or nitrogen atoms may be implanted into aluminum film by nitridation. Applicant respectfully submits that there is no motivation to combine Choi and Zhang to achieve the limitations of claim 1, nor is there an expectation from the cited references that the combination would be successful. Without such motivation or expectation, a *prima facie* case of obviousness cannot be established and the rejection of claim 1 should be withdrawn.

The abstract of Choi may refer to a capacitor structure. However, Zhang, on the other hand, is clearly directed towards thin film transistors and moreover at the production of a light shielding layer in the production of these transistors for use in driving pixel electrodes. "The primary purpose of" Zhang "is to provide a structure in which a TFT is protected from light entering from the outside in order to reduce an off current of the TFT." (Column 1, lines 39-43) Applicant has conducted a thorough review of the Zhang reference and has discovered no reference or citation to the term capacitor dielectric layer. Zhang makes not reference to the use of aluminum nitride in a capacitor or as a dielectric layer in a capacitor. A person of ordinary skill in the capacitor arts would not look towards a reference describing thin film transistors for assistance when developing methods for producing capacitors in the semiconductor arts. Therefore, Choi and Zhang cannot properly be combined to teach or suggest the nitridation of an aluminum layer when

forming a capacitor. Choi does not teach or suggest nitridation and Zhang is squarely directed toward the production of transistors.

Furthermore, the references provide no expectation that forming a first electrical node, transforming at least some of the metallic aluminum layer over the first electrical node according to claim 1 and forming a second electrical node would define at least a portion of a capacitor. Neither Choi nor Zhang provide an expectation that the transformed metallic aluminum layer would provide a capacitor dielectric layer upon transformation according to claim 1.

Therefore the cited references provide no motivation for their combination and if combined the cited references provide no expectation of success. For at least the reason that the cited references do not alone, or in combination establish a *prima facie* case of obviousness, claim 1 is allowable. Applicant requests allowance of claim 1 in the Examiner's next action.

Claims 2 and 3 all depend from claim 1 and are therefore allowable for at least the reasons discussed above regarding claim 1.

Referring next to claim 4, a method of forming a capacitor structure is recited that includes forming a first electrical node, forming a layer of metallic aluminum over the first electrical node and transforming an entirety of the metallic aluminum within the layer of metallic aluminum to AlN, AlON, or AlO. Claim 4 also recites forming a second electrical node that is electrically separated from the first electrical node by at least the transformed metallic aluminum layer. Claim 4 further recites that the first electrical node, second electrical node and transformed aluminum layer together define at least a portion of a capacitor structure.

For the reasons stated above, the cited references do not render claim 4 obvious.
Applicant requests allowance of claim 4 in the Examiner's next action.

Claims 5-26 all depend from claim 4 and are therefore allowable for at least the reasons discussed above regarding claim 4.

Having addressed all of the issues raised by the Examiner in the last Action this application is believed to be in immediate condition for allowance, and action to that end is requested.

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Respectfully submitted,

By: 

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